CLAIMS

1. A film-forming apparatus characterized by comprising a container to be depressurized, a depressurizing mechanism directly or indirectly coupled to said container, a film-forming material supply apparatus located inside or outside said container and directly or indirectly coupled to said container for supplying a film-forming material or a film-forming material precursor, and a substrate-placing portion located in said container for placing a substrate on which the film-forming material is deposited, wherein said film-forming material supply apparatus has at least an evaporation mechanism for evaporating said film-forming material or said film-forming material precursor and a portion of said evaporation mechanism, to which said film-forming material or said film-forming material precursor is to be contacted, is composed of a material having a low gas discharge or a material having a low catalytic effect.

2. A film-forming apparatus according to claim 1, characterized by comprising a transport gas-supplying mechanism for supplying a gas that transports the evaporated film-forming material or film-forming material precursor to a surface of said substrate.

3. A film-forming apparatus according to claim 1, characterized in that said evaporation mechanism comprises a heating mechanism for heating said film-forming material or said film-forming material precursor to a first temperature equal to or higher than an evaporation temperature at which said film-forming material or said film-forming material precursor is evaporated, and a predetermined portion inside said container is heated to a second temperature exceeding said evaporation temperature.

4. A film-forming apparatus according to claim 3, characterized in that a temperature of said substrate is maintained at a third temperature

lower than said evaporation temperature.

5. A film-forming apparatus according to claim 3, characterized in that said first temperature and said second temperature are lower than a temperature at which the evaporated film-forming material or film-forming material precursor is decomposed.

6. A film-forming apparatus according to claim 3, characterized in that said second temperature is higher than said first temperature.

7. A film-forming apparatus according to claim 3, characterized in that said second temperature is higher than said first temperature by 20°C or more.

8. A film-forming apparatus according to claim 4, characterized in that said third temperature is equal to or lower than said evaporation temperature.

9. A film-forming apparatus according to claim 8, characterized in that said film-forming material is a material for organic EL and said third temperature is less than 100°C.

10. A film-forming apparatus according to claim 3, characterized in that said predetermined portion is a portion adapted to contact the evaporated film-forming material or film-forming material precursor and excluding said substrate and said substrate holding portion.

11. A film-forming apparatus according to claim 2, characterized in that said transport gas-supplying mechanism comprises a portion adapted to introduce said transport gas from the outside into a container holding said film-forming material or said film-forming material precursor and a gas ejection portion having a plurality of small holes and located so as to face said substrate, and said gas transports said evaporated film-forming material or film-forming material precursor to the surface of said substrate through said gas ejection portion.

12. A film-forming apparatus according to claim 2, characterized in that said transport gas-supplying mechanism comprises a mechanism for supplying said transport gas from the outside so as to contact said evaporated film-forming material or film-forming material precursor and a mechanism for ejecting the transport gas containing said evaporated film-forming material or film-forming material precursor toward said substrate.

13. A film-forming apparatus according to claim 12, characterized in that said mechanism for ejecting comprises a shower plate or a plate comprised of a porous material.

14. A film-forming apparatus according to claim 1, characterized in that said evaporation mechanism is configured to evaporate said film-forming material or said film-forming material precursor during execution of film formation and to stop evaporation during non-execution of film formation.

15. A film-forming apparatus according to claim 1, characterized in that said depressurizing mechanism maintains the inside of said container at a pressure of 10 mTorr to 0.1 mTorr during execution of film formation.

16. A film-forming apparatus according to claim 15, characterized in that said depressurizing means causes a gas flow in said container to be in a molecular flow region during the execution of film formation and causes a gas flow in said container to be in an intermediate flow region or a viscous flow region at least for a certain period during non-execution of film formation.

17. A film-forming apparatus according to claim 12, characterized in that said gas is a xenon (Xe) gas.

18. A film-forming apparatus according to claim 2, characterized in that said gas contains an inert gas as a main component.

19. A film-forming apparatus according to claim 2, characterized in that said gas contains at least one of nitrogen (N), Xe, Kr, Ar, Ne, and He.

20. A film-forming apparatus according to claim 1, characterized in that said depressurizing mechanism comprises a turbo-molecular pump and a roughing vacuum pump and a portion for supplying an inert gas is provided between said turbo-molecular pump and said roughing vacuum pump.

21. A film-forming apparatus coupled to a substrate transfer apparatus, said film-forming apparatus characterized in that an air having a dew point temperature of -80°C or less is supplied to a space inside said substrate transfer apparatus.

22. A film-forming apparatus according to claim 1, characterized in that a pressure in said container during film formation and that during non-film formation are in a molecular flow pressure region and an intermediate flow pressure region or a viscous flow pressure region, respectively.

23. An organic EL device having an organic EL layer formed by the use of the film-forming apparatus according to claim 12.

24. An electronic device having a film layer of a predetermined material formed by the use of the film-forming apparatus according to claim 12.

25. An apparatus for processing under a depressurized condition, characterized by comprising a container to be depressurized, a primary pump coupled to said container, a secondary pump coupled to an exhaust side of said primary pump, and a process object-introducing door coupled to said container through a gasket, wherein at least said gasket is comprised of a material having a low discharge of an organic gas.

26. An apparatus according to claim 25, characterized in that said gasket contains organic compound.

27. An apparatus according to claim 25, characterized in that said gasket has been subjected to a step of contacting said gasket with water of 80°C or more.

28. An apparatus according to claim 26, characterized in that a main component of said organic compound is a perfluoroelastomer.

29. An apparatus according to claim 25, characterized by comprising, in addition to said gasket, a plurality of gaskets adapted to maintain air-tightness of said container, wherein the gasket adapted to maintain the air-tightness at a portion with a low attaching/detaching frequency is comprised of metal.

30. An apparatus according to claim 29, characterized in that the gasket adapted to maintain the air-tightness at a portion with a high attaching/detaching frequency contains organic compound.

31. An apparatus according to claim 30, characterized in that said gasket containing the organic compound has been subjected to a step of contacting said gasket with water of 80°C or more.

32. An apparatus according to claim 30, characterized in that a main component of said organic compound is a perfluoroelastomer.

33. A film-forming method for depositing a film of a predetermined material on a substrate in a container, said film-forming method characterized by comprising a step of evaporating a raw material used for forming said film of the predetermined material and a step of transporting the evaporated raw material to a surface of said substrate by the use of a gas.

34. A film-forming method according to claim 33, characterized in that said evaporating step comprises a step of heating said raw material to a first temperature equal to or higher than a temperature at which said raw material is evaporated, and a step of heating a predetermined portion inside

said container to a second temperature exceeding said temperature at which said raw material is evaporated.

35. A film-forming method according to claim 34, characterized in that a temperature of said substrate is maintained at a third temperature lower than said temperature at which said raw material is evaporated.

36. A film-forming method according to claim 34, characterized in that said first temperature and said second temperature are lower than a temperature at which the evaporated raw material is decomposed.

37. A film-forming method according to claim 36, characterized in that said second temperature is higher than said first temperature.

38. A film-forming method according to claim 36, characterized in that said second temperature is higher than said first temperature by 20°C or more.

39. A film-forming method according to claim 35, characterized in that said third temperature is equal to or lower than said temperature at which said raw material is evaporated.

40. A film-forming method according to claim 35, characterized in that said predetermined material is an organic EL material and said third temperature is less than 100°C.

41. A film-forming method according to claim 34, characterized in that said predetermined portion is a portion adapted to contact said evaporated raw material and excluding said substrate.

42. A film-forming method according to claim 33, characterized in that said raw material is said predetermined material or a precursor of said predetermined material.

43. A film-forming method according to claim 33, characterized by placing said raw material in a heat-resistant container, placing said heat-resistant container in a gas container, introducing said gas into said gas

container to transport said evaporated raw material by the use of said gas, and causing said gas to reach the surface of said substrate through a gas ejection portion while transporting said evaporated raw material, wherein said gas ejection portion having a plurality of small holes is provided so as to face said substrate.

44. A film-forming method according to claim 33, characterized by maintaining the inside of said container at a pressure of 10 mTorr to 0.1 mTorr during execution of film formation and maintaining the inside of said container at a reduced pressure of 1 Torr or more at least for a certain period during non-execution of film formation.

45. A film-forming method according to claim 33, characterized by causing a gas flow in said container to be in a molecular flow region during execution of film formation and causing a gas flow in said container to be in an intermediate flow region or a viscous flow region at least for a certain period during non-execution of film formation.

46. A film-forming method according to claim 33, characterized in that said gas is a xenon (Xe) gas.

47. A film-forming method according to claim 33, characterized in that said gas contains an inert gas as a main component.

48. A film-forming method according to claim 47, characterized in that said inert gas contains at least one of nitrogen (N), Xe, Kr, Ar, Ne, and He.

49. A film-forming method according to claim 33, characterized in that said predetermined material is an organic EL element material.

50. An organic EL device manufacturing method characterized by comprising a step of forming a film of an organic EL element material by the use of the film-forming method according to claim 33.

51. An electronic device manufacturing method characterized by comprising a step of forming a film layer of a predetermined material by the use of the film-forming method according to claim 33.

52. An organic EL device having an organic EL layer formed by the use of the film-forming method according to claim 33.

53. An electronic device having a layer of a predetermined material formed by the use of the film-forming method according to claim 33.